Fig. 31 is a view showing arrangements of a projector, a mobile-type computer, and a cellular phone.

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DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0013] The following description will describe embodiments of the present invention with reference to the drawings. In particular, the following description will describe an electro-optic device using a sub-field driving method, which is the pixel driving method according to the present invention.

[0014] Fig. 1 shows an arrangement of an electro-optic device of a first embodiment. The electro-optic device is provided with a plurality of pixels aligned in a matrix between an element substrate and a counter substrate. A predetermined number of pixels aligned in the row direction (X) are selected concurrently and such a selection is performed sequentially in a vertical direction, in other words, line-sequentially. As the selection occurs, a signal defining a level of grayscale, that is, 0 or ±V, is applied to the pixels within one frame, that is, during a period of one frame, thereby allowing each pixel to display that level of grayscale. To be more specific, the electro-optic device selects, for example, a predetermined number of pixels aligned in one row in each of a plurality of sub-fields that together form one frame. Pulse width modulation is effected to these pixels within one frame depending on in which sub-fields a voltage is applied to these pixels. Consequently, it is possible to allow these pixels to display a particular level of grayscale during one frame by changing a voltage root-mean-square value applied to the pixels.

[0015] Hereinafter, application of ±V is referred to as ON and application of 0 is referred to as OFF. It should be appreciated, however, that because liquid crystals demand alternating driving, application of +V and application of –V are substantially equivalent in terms of grayscale.

[0016] Fig. 10 shows sub-fields. As shown in Fig. 10, one frame (1F) can be composed of sub-fields SF1-SF7. A weight assigned to the length of the sub-fields SF1-SF3 is set small, whereas a weight assigned to the length of the sub-fields SF5-SF7 is set large. For example, assume that grayscale data, which is supplied to the electro-optic device and defines a level of grayscale the pixels should display, determines 16 levels with four bits. Then, the length of each of the sub-fields SF1-SF3 corresponds to the level 1, and the length of each of the sub-fields SF5-SF7 corresponds to the level 4. In other words, the length of the sub-fields SF5-SF7 is substantially equal to the sum of a total of the lengths of the three sub-fields SF1-SF3 and the length of one of these sub-fields. In order to give a threshold voltage Vth relating to the driving of liquid crystals, the sub-field SF4 provided between the sub-